CLAIMS

1. An amyloid fibril substantially free of other protein.

2. A fibril according to claim 1 which is a naturally occurring amyloid fibril.

3. A fibril according to claim 2 which comprises the Aβ peptide associated with Alzheimer's disease, the prion protein associated with the transmissible spongiform encephalopathies, the islet-associated polypeptide associated with type II diabetes, transthyretin and fragments thereof associated with senile systemic amyloidosis, transthyretin variants and fragments thereof associated with familial amyloidotic polyneuropathy or other variant, truncated, or misprocessed proteins associated with the systemic amyloidoses.

4. A non-naturally occurring amyloid fibril comprising a protein.

5. A fibril according to any one of the preceding claims which is not an amyloid fibril formed from an SH3 domain (PI3-SH3) of a p85α subunit of bovine phosphatidylinositol 3-kinase at pH 2.0.

6. A fibril according to claim 5 which is not an amyloid fibril formed from an SH3 domain (PI3-SH3) of a p85α subunit of bovine phosphatidylinositol 3-kinase.

7. A fibril according to any one of claims 4 to 6 wherein the protein is a non-naturally occurring protein.

8. A fibril according to any one of claims 4 to 7 wherein the protein is selected from a derivative or amino acid variant of an SH3 domain (PI3-SH3) of a p85α subunit of bovine phosphatidylinositol 3-kinase, and human muscle acylphosphatase, bovine insulin, a protein corresponding to the first two

(CspB-1), the first three (CspB-2) or the last two (CspB-3) β strands of CspB, the wild type human carboxypeptidase A2 (WT-ADA2h)and derivatives or amino acid variants thereof.

9. A non-naturally occurring amyloid fibril comprising an SH3 domain (PI3-SH3) of a p85α subunit of bovine phosphatidylinositol 3-kinase and at least one protein selected from the proteins as defined in claim 8.

10. A fibril according to any one of the preceding claims which further comprises a pharmaceutically active compound.

11. A fibril according to any one of claims 1 to 9 which further comprises a metal.

12. A fibril according to claim 11 which further comprises a metal selected from copper, silver or gold.

13. A fibril according to any one of claims 1 to 12 which further comprises one or more functional groups capable of binding one or more reactants.

14. A fibril according to any one of claims 1 to 13 wherein the diameter of the fibril is from 1 to 20 nm.

15. A fibril according to claim 14 wherein the diameter of the fibril is from 5 to 15 nm.

16. A fibril according to claim 15 wherein the diameter of the fibril is from 7 to 12 nm.

17. A process for preparing a fibril as claimed in any one of the preceding claims which process comprises preparing a solution comprising a protein, said

solution being in a state so that nucleation and fibril growth will occur over an acceptable time, and allowing nucleation and fibril growth to take place.

18. A process according to claim 17 wherein the solution further comprises an alcohol.

19. A process according to claim 18 wherein the solution further comprises an alcohol selected from methanol, ethanol, propanol, butanol, trifluoroethanol and hexafluoroisopropanol.

20. A process according to claim 17 wherein the solution further comprises acetonitrile.

21. A process according to claim 17 wherein the solution further comprises urea.

22. A process according to any one of claims 17 to 21 wherein the concentration of protein in the solution is from 0.1 mM to 10 mM.

23. A process according to any one of claims 17 to 22 wherein the temperature of the solution is from 0°C to 100°C.

24. A process according to any one of claims 17 to 23 wherein the solution is acidic.

25. A process according to claim 24 wherein the pH of the solution is from 0.5 to 6.5.

26. A process according to any one of claims 17 to 25 wherein the solution is seeded with previously formed particles of protein.

27. A fibril as claimed in any one of claims 1 to 16 whenever prepared by the

process as claimed in any one of claims 17 to 26.

28. Use of a fibril according to any one of claims 1 to 16 or 27 as a plastic or in electronics or catalysis.

29. A fibril according to any one of claims 1 to 16 or 27 for use in the treatment of the human or animal body.

30. Use of a fibril according to any one of claims 1 to 16 or 27 in the manufacture of a medicament for use in the treatment of diabetes, blood clotting disorders, cancer and heart disease.

31. A method of treating a human or animal, which method comprises administering thereto a non-toxic and effective amount of a fibril as claimed in any one of claims 1 to 16 or 27.

32. A method according to claim 31 wherein the human or animal is suffering from or susceptible to diabetes, blood clotting disorders, cancer or heart disease.